Invitation for Public Comment on the List of Candidates for the EPA Science Advisory Board Ecological Processes and Effects Committee Augmented for the Review of Aquatic Life Water Quality Criteria Methods

December 27, 2016

The U.S. Environmental Protection Agency (EPA) Science Advisory Board (SAB) Staff Office announced in a *Federal Register* Notice (Volume 81, Number 168, Pages 59621-59622) published on August 30, 2016 that it was augmenting the Ecological Processes and Effects Committee (EPEC) to review and provide independent expert advice, through the Chartered SAB, on the scientific and technical issues related to the Agency's proposed methods for revising and updating water quality criteria, as described in the Agency's draft scoping document, entitled "Scope and Approach for Revising USEPA's Guidelines for Deriving National Water Quality Criteria to Protect Aquatic Life."

To augment the EPEC, the SAB Staff Office sought public nominations of recognized experts with demonstrated expertise and research in one or more of the following areas: aquatic toxicology, ecotoxicology, aquatic ecology, ecological risk assessment, ecological effects modeling, and statistics, especially as applied to developing robust computational methods for estimating acute and chronic effects of water pollutants on aquatic life and aquatic-dependent wildlife.

Attached is a List of Candidates that includes the biosketches of both current members of the EPEC and other nominees. In total, the SAB Staff Office has identified 43 candidates based on their relevant expertise and willingness to serve.

The SAB Staff Office Director will make the final decision about who will serve on the augmented Committee based on all relevant information. This includes a review of the confidential disclosure form (EPA Form 3110-48), relevant information gathered by staff, and public comments. For the EPA SAB Staff Office, a balanced augmented Committee is characterized by inclusion of candidates who possess the necessary domains of knowledge, the relevant scientific perspectives (which, among other factors, can be influenced by work history and affiliation), and the collective breadth of experience to adequately address the general charge. Specific criteria to be used in evaluating a candidate include: a) scientific and/or technical expertise, knowledge, and experience; b) availability and willingness to serve; c) absence of financial conflicts of interest; d) absence of appearance of a lack of impartiality; e) skills working in advisory committees and panels, and, for the panel as a whole, f) diversity of scientific expertise and viewpoints.

We hereby invite comments on the attached List of Candidates for consideration by the SAB Staff Office in the formation of this Panel. Comments should be submitted to Iris Goodman, Designated Federal Officer, no later than January 31, 2017. E-mailing comments (goodman.iris@epa.gov) is the preferred mode of receipt. Please be advised that comments received are subject to release under the Freedom of Information Act.

Ecological Processes and Effects Committee Augmented for the Review of Aquatic Life Water Quality Criteria Methods
Adams, William
Independent Consultant
Dr. William J. Adams is Chief Advisor for Rio Tinto. His current responsibilities are to manage a corporate global site remediation program. This includes nine mine sites and numerous other sites where soil or groundwater remediation is required. Dr. Adams received his M.S. in wildlife toxicology and Ph.D. in aquatic toxicology from Michigan State University. His recent research interests include developing ecotoxicology risk assessment methods for metals, site-specific methodologies for water quality criteria for metals and approaches for assessing hazards of metals. Dr. Adams was a member of the EPA Science Advisory Board (SAB) for 8 years and previously served on the EPA Superfund National Advisory Committee for Environmental Policy and Technology. Additionally, he chairs several workgroups for the metals industry. Dr. Adams has published more than 100 papers, including 25 papers on metals related to ecological effects and exposure for birds and aquatic life. His recent publications have dealt with approaches for setting site specific water quality standards for copper and selenium. He is currently working on developing biotic ligand models for establishing water quality criteria for aluminum and iron. Dr. Adams is a Society of environmental Toxicology and Chemistry (SETAC) Fellow and his current research is solely supported by Rio Tinto.
Alber, Merryl
University of Georgia
Dr. Merryl Alber is a Professor in the Department of Marine Sciences at the University of Georgia. She is a marine ecologist who specializes in estuarine ecology and coastal policy. Dr. Alber is the Project Director of the National Science Foundation (NSF) sponsored Georgia Coastal Ecosystems Long Term Ecological Research program, which is focused on the effects of climate change and human activities on salt marshes and estuaries. She is also active in efforts to improve communication between scientists and coastal managers, and to that end has established the Georgia Coastal Research Council, which works closely with the State coastal management program. Dr. Alber has been on the faculty of the University of Georgia since 1994, where she teaches graduate and undergraduate courses in marine biology, marine ecology, and coastal policy. In 2013 she was appointed Director of the University of Georgia Marine Institute on Sapelo Island, which is a field station that provides exceptional opportunities for research and education in coastal ecosystems. Dr. Alber is currently on the editorial boards of Estuarine, Coastal and Shelf Sciences and is the Editor of Coastal and Estuarine Science News. She has also served on the Board of the Coastal and Estuarine Research Federation as well as a Heinz Center panel on Coastal Management Performance Measures and Indicators. Dr. Alber's research is currently funded by

grants from the National Science Foundation, the Georgia Coastal Management Program, and Georgia Sea Grant. Dr. Alber holds a B.S. in Zoology/Botany from Duke University and a Ph.D. in Biology from the Boston University Marine Program.

Baker, Michelle

Utah State University

Dr. Baker is Professor of Biology, and an Associate of the Ecology Center at Utah State University. She holds a B.S. in Biology from Lafayette College and Ph.D. in Biology from the University of New Mexico. She is an ecosystem ecologist whose research program focuses on physical, chemical, and biological processes that affect water quality and ecosystem function in streams and rivers. Her current studies investigate how ecological tools can assist with development of nutrient criteria for streams, biogeochemical and hydrological factors that affect nutrient transport in rivers, and how stream network configuration and human activity affects nitrogen and organic matter cycling. Dr. Baker has served on national and regional advisory groups, including serving as a panelist for the EPA Workshop on Nutrient Indicators, and the Aquatic Ecosystems Workshop Group for the Assessment of Climate Change Effects on Aquatic Ecosystems of the Great Basin-Rocky Mountain Region. She currently serves on several state-level advisory groups including the Jordan River Technical Advisory Committee for the state of Utah's Department of Environmental Quality and the Technical Committee for the Mountain Accord Environmental Dashboard. She directs iUTAH EPSCoR – a multi-university research and training program aimed at strengthening science for Utah's water future.

Boyer, Elizabeth W.

Pennsylvania State University

Dr. Elizabeth W. Boyer is an Associate Professor of Water Resources in the Department of Ecosystem Science and Management at the Pennsylvania State University. She serves as Director of the Pennsylvania Water Resources Research Center, and as Assistant Director of Penn State Institutes of Energy and the Environment. Prior to her current position, Dr. Boyer served on the faculty at the State University of New York at Syracuse and at the University of California at Berkeley. She holds a B.S. degree in Geography from the Pennsylvania State University, and M.S. and Ph.D. degrees in Environmental Sciences from the University of Virginia. Dr. Boyer's work focuses on hydrological and ecological processes that affect water resources, and long-term monitoring and assessment of water quality. Her research explores the status and trends of water quality of streams, rivers, and estuaries in response to factors such as atmospheric deposition, climatic variability, land use, and watershed management. Dr. Boyer's recent research is funded by the Pennsylvania Department of Environmental Protection, the U.S. Geological Survey, the U.S. Environmental Protection Agency, and the U.S. National Science Foundation. Dr. Boyer serves on the Board of Directors of the Universities Council on Water Resources. She has chaired the

American Geophysical Union's technical committee on Water Quality, and has chaired the international Gordon Research Conference on Catchment Science.

Boyer, Joseph

Plymouth State University

Dr. Joseph N. Boyer is the Director of the Center for the Environment at Plymouth State University in NH. Previously he was Director of the Southeast Environmental Research Center at Florida International University in Miami. He received a BS in Microbiology from the American University and a Ph.D. in Marine Science from the Virginia Institute of Marine Science at the College of William & Mary. He has experience in microbial ecology and biogeochemistry of coastal oceans, estuaries, rivers, and groundwater ecosystems. His research focuses on physical/chemical effects on microbial communities and water quality with specific expertise in bacterial and phytoplankton nutrient cycling processes, ecosystem biogeochemistry, analysis of spatial and temporal data, and threshold analysis. His recent research involves developing system-wide indicators of ecosystem restoration and the incorporation and valuation of ecosystem services into science, management, and policy thinking. He is a founding principal investigator of the NSF-funded Florida Coastal Everglades Long Term Ecological Research network site (2000), and the EPA-funded Water Quality Monitoring Project for the Florida Keys National Marine Sanctuary (since 1995). Along with two other collaborators, their objective analytical method for coastal and estuarine segmentation, "Proposed Methodology for the Assessment of Protective Numeric Nutrient Criteria for South Florida Estuaries and Coastal Waters", was adopted into State of Florida rule, 62-302 - Surface Water Quality Standards, and accepted by EPA (2012) in accordance with 40 CFR Part 131. He has served on numerous national and regional scientific advisory boards including, NH Sea Grant Policy Advisory Committee, NOAA Gulf Coast Ecosystem Restoration Science Program Advisory Working Group, Florida Department of Environmental Protection Numeric Nutrient Criteria Technical Advisory Committee, and Southeast Coastal Ocean Observing Regional Association. He also has participated in multiple review panels for NSF, NOAA, Sea Grant, five national program reviews, and multiple assessments of federal science programs. Dr. Boyer has received EPA funding in the past two years.

Brix, Kevin

University of Miami

Dr. Kevin Brix is a Principal Scientist at EcoTox, an environmental consulting firm, and is also an Adjunct Assistant Professor at the University of Miami Rosenstiel School of Marine and Atmospheric Science where he teaches undergraduate and graduate courses in environmental toxicology. Dr. Brix obtained a BS in biology from the University of North Florida and a PhD in comparative physiology from University of Miami. His post-doctoral research at McMaster University and University of British Columbia focused on the physiological effects of metals and

evolution of ion transport in aquatic organisms. His current research continues focus on the physiological effects of metals, major ions, and pollutant mixtures on aquatic organisms and development of both mechanistic and statistical models for setting regional and site-specific water quality criteria. He has been funded by the National Science Foundation, National Sciences and Engineering Research Council (Canada), Environment Canada, as well as mining companies and international metal research organizations. Dr. Brix has published 63 papers in the peer-reviewed literature along with 10 book chapters, and he has edited two books. The vast majority of these publications have focused on issues surrounding the development of water quality criteria. Currently, Dr. Brix serves on the editorial boards of three peer-reviewed journals (Environmental Toxicology and Chemistry, Comparative Biochemistry and Physiology, and Scientific Reports). Over the past 20 years, Dr. Brix has been invited to participate in 26 expert workshops and review panels, 17 of which were on various aspects of water quality criteria development. This includes nine peer review panels for revisions to USEPA water quality criteria documents, and three USEPA expert workshops. He is the recipient of the Society of Environmental Toxicology and Chemistry Chris Lee award for metals research. In the past two years, Dr. Brix has received research funding from Rio Tinto, the Nickel Producers Environmental Research Association, and the National Science Foundation.

Bruck, Robert

Louisburg College

Dr. Bruck was educated at the University of Buffalo, Syracuse University and SUNY College of Environmental Science and Forestry where he earned a double doctorate; he also held a Post-Doctoral Fellowship at Cornell University. Dr. Bruck served for 35 years, until his retirement as Alumni Distinguished Professor at North Carolina State University. In 2014 he accepted the position of Distinguished Professor of Environmental Science and Assistant Dean for STEM programs at Louisburg College. During his long career Dr. Bruck received numerous awards including: The 1997 North Carolina Award for Science, Order of the Longleaf Pine, US Environmental Protection Agency Gold Medal, Outstanding Teacher and Adviser Awards (NCSU). He currently serves on the White House Council on Environmental Quality. During 1991-92 he was Science Adviser to the Governor of North Carolina (James G. Martin). Dr. Bruck did not receive research funding in the past two years.

Buchwalter, David

North Carolina State University

Dr. David B. Buchwalter is an Associate Professor in the Department of Biological Sciences and Coordinator of the Environmental Toxicology Concentration within the Graduate Toxicology Program at North Carolina State University (NCSU). He received his BS in Zoology from the University of Massachusetts, Amherst, and MS and PhD degrees in Toxicology from Oregon State University. Dr. Buchwalter was a

National Research Council Post-doctoral fellow at the US Geological Survey in Menlo Park, California, prior to starting his academic career at NCSU. His research program focuses on environmental toxicology and comparative physiology, using aquatic insects as a focal faunal group to better link laboratory based work to patterns observed in nature. Specific research interests include trace metals, salinity and thermal stress. He has authored 47 peer-reviewed publications and 4 book chapters, highlighted by publications in the Proceedings of the National Academy of Sciences, Science, and Environmental Science and Technology. His research has been funded by the National Science Foundation, US Geological Survey, US Environmental Protection Agency, Water Resources Research Institute, Electric Power Research Institute. Dr. Buchwalter was the recipient of a Fulbright Senior Scholar fellowship to conduct pesticide research in New Zealand in 2015. Dr. Buchwalter has reviewed several technical documents for the US Environmental Protection Agency and the State of California regarding water quality and has served on a science advisory panel for the state of California for the development of biological objectives for freshwaters. He is a member of the Society of Environmental Toxicology and Chemistry, Society for Freshwater Science, and the Society for Integrative and Comparative Biology, and is an Associate Editor for the journal Comparative Biochemistry and Physiology – Part C: Toxicology and Pharmacology. In the past two years, Dr. Buchwalter has received funding from the Water Resources Research Institute of North Carolina, the National Science Foundation, and the state of Utah.

Canton, Steven

GEI Consultants

Mr. Canton has more than 35 years of professional experience in the design of aquatic evaluation programs, field sampling of aquatic habitats, water quality/biological data analysis, and statistical analysis of stressor effects. He is a recognized expert in water quality effects on aquatic life, and frequently provides expert testimony and support for regulatory water quality hearings, environmental assessments, and ambient water quality standards development. Mr. Canton manages GEI's national Ecology Practice and also oversees GEI's Aquatic Laboratory where analyses are regularly conducted on aquatic macroinvertebrates and zooplankton, whole effluent toxicity (WET) testing, nutrient analysis, and various EPA approved water quality analyses. He has completed project work in more than 30 states. He has also participated as an invited expert for selenium risk evaluation in aquatic environments for the Society of Environmental Toxicology and Chemistry ("Pellston Conference"), has provided peer review for selenium effects issues near coal mining sites in British Columbia (on behalf of the BC Ministry of the Environment), has peer reviewed new molybdenum water quality standards on behalf of the International Molybdenum Association, and provides technical review of water quality issues for the National Mining Association.

Chen, Celia

Dartmouth College

Dr. Celia Chen is a Research Professor in the Department of Biological Sciences at Dartmouth College. She has been a lead scientist for 19 years in the Dartmouth Toxic Metals Superfund Research Program and has studied the fate and effects of metal contaminants in freshwater and estuarine ecosystems including the bioaccumulation and trophic transfer of mercury in lakes throughout the Northeast United States and coastal marshes from Maine to Maryland. Her mercury work has focused on the interactions between eutrophication and methylmercury biomass dilution in lakes and carbon loading and methylmercury bioavailability in estuaries. She has also conducted research on using genomic tools as biomarkers of metal exposure for the model organisms, Daphnia pulex and Fundulus heteroclitus. She has investigated the effects of multiple stressors on aquatic organisms by developing methods for quantifying the antagonistic, synergistic, and additive effects of stressors such as organic contaminants, pH, food availability, and temperature. Dr. Chen has also studied the impact of environmental changes related to climate on demography and phenology of aquatic invertebrates, and more recently on the cycling and fate of methylmercury in marine ecosystems. Dr. Chen received her undergraduate degree in Biology and Environmental Studies at Dartmouth College, a Master's degree in Biological Oceanography at the Graduate School of Oceanography of the University of Rhode Island and a Ph.D. in Ecology from Dartmouth College. She worked as a Staff Officer at the Marine Board of the National Research Council and has chaired regional and international workshops on mercury in marine ecosystems. In 2010-2012, she led a science translation initiative, the Coastal Marine Mercury Ecosystem Research Collaborative comprised of over 70 mercury scientists, to bring mercury science to national and international policy-makers. She is currently a Review Editor for the journal, Ecohealth, and has been a guest editor of special issues in Environmental Research, Environmental Health Perspectives, Estuaries and Coasts, and Ecohealth. She currently serves on the U.S. EPA Science Advisory Board Ecological Processes and Effects Committee as well as the Board of the North Atlantic Chapter of the Society of Environmental Toxicology and Chemistry, Gelfond Fund Advisory Committee at Stony Brook University, and the Scientific Advisory Committee of the Lake Sunapee Protection Association in New Hampshire. Her research has recently been supported by the National Institute of Environmental Health Sciences, the National Science Foundation, and the U.S. Department of Agriculture Forest Service.

Clements, William

Colorado State University

Dr. William H. Clements is a Professor in the Department of Fish, Wildlife, and Conservation Biology and a faculty advisor in the Graduate Degree Program in Ecology at Colorado State University. Dr. Clements holds a B.S and M.S. in Biology

from Florida State University, and a Ph.D. in Zoology from Virginia Tech. Dr. Clements has been on the faculty of the Colorado State University since 1989. Dr. Clements' research interests focus primarily on community and ecosystem responses to contaminants. He is especially interested in questions that address responses to multiple perturbations and interactions between contaminants and global climate change. He is the author/co-author of two textbooks in ecotoxicology (Community Ecotoxicology and Ecotoxicology: a Comprehensive Treatment) and has published over 100 peer-reviewed papers and book chapters in ecotoxicology. At Colorado State University he teaches graduate and undergraduate courses in ecology, experimental design, and pollution ecology. Dr. Clements is active in several professional societies including the Society of Environmental Toxicology and Chemistry (SETAC) and the Society of Freshwater Science (SFS). He chaired the Executive Committee for SFS and was elected to the Board of Directors of SETAC in 2003 and again in 2012. Clements is currently the President, of the Rocky Mountain Chapter of SETAC. He currently serves as an Associate Editor for the journal Freshwater Science (formerly the Journal of the North American Benthological Society) and has previously served on the Editorial Board of SETAC (1995-1997), as a Guest Editor for the Journal of Ecosystem Stress and Recovery (2000) and for Ecological Applications (2007). At the national level, Dr. Clements has served on a Department of Interior Federal Advisory Committee and on two separate National Academy of Sciences National Research Council committees investigating effects of dredging operations at U.S. EPA Superfund Sites and effects of coalbed methane development in the West. He served on a U.S. EPA Science Advisory Board panel that provided advice on effects of mountaintop mining (2010-2012). Current research in Dr. Clements' laboratory is funded by the National Institute of Environmental Health Sciences (remediation effectiveness for mining sites); the Colorado Division of Wildlife (quantitative assessment restoration effectiveness in the Arkansas River; Development and validation of rapid assessment techniques for determining effects of petroleum hydrocarbons on stream communities); the U.S. Geological Survey (metal uptake and transfer in stream and riparian communities); and the Chevron Cooperation (stream and riparian community integrity in the Piceance Basin: a quantitative assessment of restoration effectiveness).

Deforest, David

Windward Environmental

Mr. DeForest is a Partner and Environmental Toxicologist with Windward Environmental. He has a B.S. in Environmental Science from Western Washington University and over 20 years of experience in the fields of aquatic toxicology and ecological risk assessment. Much of his work has been related to various aspects of ambient water quality criteria for protection of aquatic life, including development of recommendations for updated criteria, technical peer review of draft criteria developed by the U.S. Environmental Protection Agency and associated key studies, and development of alternative approaches for deriving criteria. He has

participated in several large projects relative to water quality criteria, including the Arid West Water Quality Research Project, which evaluated the relevance of national water quality criteria to ephemeral and effluent-dependent streams. He also participated in a project that recommended updated cyanide criteria and provided a framework for evaluating the protectiveness of criteria relative to threatened and engendered aquatic species. Finally, Mr. DeForest is experienced in the methods by which water quality criteria are incorporated into effluent-based evaluations following U.S. Environmental Protection Agency guidance, including reasonable potential analyses and derivation of permit limitations. He has received project funding from both government and industry sources for projects relative to development or technical review of water quality criteria or guidelines. Mr. DeForest participated in the Invited Expert Meeting on Revising U.S. EPA's Guidelines for Deriving Aquatic Life Criteria in September 2015. He is currently an Associate Editor for the journal Ecotoxicology and is on the Editorial Board for the journal Integrated Environmental Assessment and Management.

Denslow, Nancy

University of Florida

Dr. Nancy Denslow is a professor in the Departments of Physiological Sciences and Biochemistry and Molecular Biology at the University of Florida, Gainesville, Florida. She received her Ph.D. from the University of Florida. Her research focuses on applying molecular methods to understand endocrine disruption in aquatic organisms. She has pioneered the use of transcriptomics and proteomics technologies for non-model species that are vulnerable to environmental toxicants. She served as the past director of the Proteomics Core Facility in the Biotechnology Program at the University of Florida. Dr. Denslow has over 220 peer-reviewed publications and is an inventor on four patents relating to protein factors, biomarkers for endocrine disruption and proteomics methodologies. Her research over the past two years was funded by the National Science Foundation, National Institute of Environmental Health Science, United States Geological Survey, the San Francisco Estuary Institute and the University of Florida. Professor Denslow's teaching responsibilities include graduate courses in Ecotoxicology and Risk Assessment and Toxicogenomics. She has received several awards for her research including the 2007 Pfizer Award for Research Excellence, the 2014 Zoetis Award for Veterinary Research Excellence, and the Founders Award, the highest award given for research excellence by the Society of Environmental Toxicology and Chemistry. She also was the recipient of a Fulbright Specialist award in Environmental Sciences. She was named a University of Florida Research Professor for 2009-2012. Professor Denslow is a member of the Society of Toxicology (SOT, Molecular Biology Specialty Section, past president, 2014-2015; Reproductive and Developmental Toxicology Specialty Section, current secretary/treasurer), Society for Environmental Toxicology and Chemistry, American Society for Biochemistry and Molecular Biology and the Association of Biomolecular Research Facilities. She has previously served as an Associate Editor for Ecotoxicology and Environmental

Safety and for Comparative Biochemistry and Physiology and serves as an ad hoc reviewer for various federal agencies.

Di Giulio, Richard

Duke University

Richard T. Di Giulio is the Kleberg Professor of Environmental Toxicology in the Nicholas School of the Environment at Duke University. At Duke, he also serves as Director of the Integrated Toxicology and Environmental Health Program, Director of the Superfund Research Center, and Co-Principal Investigator for the Center for the Environmental Implications of Nanotechnology. Dr. Di Giulio received a B.A. in comparative literature from the University of Texas at Austin, the M.S. in wildlife biology from Louisiana State University and the Ph.D. in environmental toxicology from Virginia Polytechnic Institute and State University. He is an active member of the Society of Environmental Toxicology and Chemistry (SETAC) and the Society of Toxicology (SOT). Dr. Di Giulio serves as an advisor for the Scientific Advisory Board of the U.S. EPA and is associate editor for Environmental Health Perspectives and the Journal of Exposure Science and Environmental Epidemiology. Dr. Di Giulio has published extensively on subjects including biochemical and molecular mechanisms of adaptation and toxicity, biomarkers for chemical exposure and toxicity, and effects of chemical mixtures and multiple stressors. His current work focuses on mechanisms by which polycyclic aromatic hydrocarbons (PAHs) and nanomaterials perturb embryonic development in fish models (zebrafish and killifish), the evolutionary consequences of hydrocarbon pollution on fish populations, and the ecological and human health impacts of coal extraction and fly ash disposal. Additionally, he has organized symposia and workshops, and written on, the broader subject of interconnections between human health and ecological integrity. His research is supported by NIEHS, NSF and the U.S. EPA.

Findlay, Stuart

Cary Institute of Ecosystem Studies

Dr. Stuart Findlay is a Senior Scientist at the Cary Institute of Ecosystem Studies in Millbrook, NY. He received his Ph.D. from the University of Georgia. Dr. Findlay has conducted research on a wide variety of aquatic ecosystems including streams, lakes, large rivers and wetlands. His primary focus has been on element and material cycling and processes with an emphasis on microbial processes. These research efforts have considered carbon and nitrogen fluxes and transformations among components of particular ecosystems as well as a strong cross-system comparative approach. Much of his research has been carried out in the tidal freshwater Hudson River where he has described the importance of microbial growth and how different microbes and other organisms contribute to whole-system nutrient budgets. In the Hudson he helped implement the Hudson River Environmental Observing System, a network of real-time water quality sensors intended to capture effects of events and detect subtle trends in environmental

variables. His recent research has been funded by the National Science Foundation, the National Oceanic Atmospheric Administration and the Hudson River Foundation. He has authored over 100 peer-reviewed papers and numerous book chapters. He currently serves on several Advisory Committees including the Hudson River Estuary Management Committee for the New York State Department of Environmental Conservation and the EPA's Long Island Sound Science and Technical Advisory Committee. He has received many awards including the National Wetlands Award from the Environmental Law Institute in 2015 and an Environmental Quality Award from EPA Region 2 in 2013. He is currently a member of the Board of Directors for the Society of Freshwater Science and he is the Editor-in-Chief for Aquatic Sciences. He has a strong interest in extending his own research to practitioners and multiple stake-holders and frequently participates in workshops addressing specific real-world problems. In the past two years, Dr. Findlay research has been funded by the National Estuarine Research Reserve System Science Collaborative, the Hudson River Foundation, and the National Science Foundation.

Gensemer, Robert

GEI Consultants

Dr. Robert W. Gensemer is a Vice President and Senior Ecotoxicologist at GEI Consultants, Inc. He holds a PhD in Biological Sciences from the University of Michigan, held postdoctoral research fellowships at the University of Waterloo and University of Guelph, and prior to joining the private sector, was an Assistant Professor at Boston University. Dr. Gensemer has 31 years of academic and industrial experience in aquatic ecology and limnology, ecotoxicology, phytoplankton ecology, plant toxicology, and the environmental toxicology of metals and polycyclic aromatic hydrocarbons (PAHs). His project experience includes general aquatic toxicology, the conduct and oversight of ecological risk assessments for both aquatic and terrestrial habitats, sediment remedial investigations under EPA's Superfund program, and the development and modification of ambient water quality criteria for protection of aquatic life. One of Dr. Gensemer's primary areas of technical expertise is the development and basis of aquatic life criteria for Clean Water Act compliance, including the development and updating of toxicity databases, criteria derivation and modification, site-specific criteria development, and the use and development of biotic ligand models (BLMs) for derivation of site-specific metals criteria. He has provided expert testimony in state water quality hearings (including NM, CO, and WV) to update both statewide and regional criteria, and has assisted in the development, modification, and negotiation of numerous permitted effluent discharge limits. He is also leading national efforts to review and/or implement new scientific approaches for aquatic life protection, including the national implementation of BLM-based copper criteria, and to review the technical basis of EPA's recent efforts to propose changes to definitions of waters of the United States. Dr. Gensemer has received funding support from numerous sources including the Copper

Development Association, the Aluminium REACH Consortium, private mining companies including the National Mining Association, several municipal wastewater utilities, and several energy utilities.

Giddings, Jeffrey

Compliance Services International

Jeffrey Giddings is a Principal Consultant with Compliance Services International in Lakewood, WA; he operates a satellite office in Rochester, MA. Dr. Giddings holds an A.B. in Biology and a Ph.D. in Aquatic Ecology, both from Cornell University. His current work focuses on ecological risk assessment and endangered species assessment of pesticides. His clients include major producers of chemicals for crop protection, residential and wide-area pest control, and invasive species management. Recent projects include aquatic risk assessments of pyrethroid insecticides; national endangered species assessments of several pesticides; analyses of species sensitivity distributions for aquatic plants to herbicides and aquatic animals to insecticides; review and interpretation of mesocosm studies with atrazine; compilation and analysis of surface water monitoring data for pyrethroid insecticides; and investigation of synergism of pesticide toxicity to aquatic fish and invertebrates. Dr. Giddings served on the Aquatic Effects Dialog Group (1990-1992) and EPA's Ecological Committee on FIFRA Risk Assessment Methods (ECOFRAM, 1996-2000; chair of Aquatic Effects Workgroup), and has made numerous presentations to EPA's FIFRA Scientific Advisory Panel. He has participated in many expert workshops, including EPA's Invited Expert Meeting on Revising U.S. EPA's Guidelines for Deriving Aquatic Life Criteria (2015) and several Endangered Species Stakeholder Meetings (2014-16), as well as workshops sponsored by the Society of Environmental Toxicology and Chemistry (SETAC) such as Re-evaluation of the State of the Science for Water-Quality Criteria Development (1998), Community-Level Aquatic System Studies Interpretation Criteria (1999), Extrapolation Practice for Ecological Effects and Exposure Characterization of Chemicals (2003), and Problem Formulation for Ecological Risk Assessments (2010). He is an active member of SETAC, having served as editor of its North American newsletter (1985-1999) and its global newsletter (2000-2003), member of the Board of Directors (1987-1990), and Chair of the Publications Advisory Council (2003-2006). He received SETAC's Exceptional Service Award in 1991 and was named a SETAC Fellow in 2016. He is also a member of the American Chemical Society.

Holm, Stewart

American Forest & Paper Association

Stewart Holm is the Chief Scientist at the American Forest & Paper Association and has over 25 years of experience in the areas of aquatic toxicology, environmental

chemistry, and risk assessment. For education, he was awarded a B.A in Chemistry and Biology and an M.S. in Chemical Oceanography. He was also awarded a fellowship through the Sea Grant College Program where he served as a staff scientist with NOAA and the National Status and Trends program. His post-graduate coursework included studies in toxicology and risk assessment. His areas of expertise are the sources, transport, fate and effects of contaminants in the environment. He has contributed to the scientific literature mainly in the fate and effects of industrial waste streams. He has served on expert oversight committees for the state of Maine and for the National Council for Air & Stream Improvement. Other activities have been invited participation in scientific discussions on policy implications of new evidence regarding toxic substances and human health sponsored by governmental organizations such as the International Joint Commission. Lastly, Holm has mentored and challenged several master's and doctoral degree candidates at a major university as a member of the dissertation committee.

Johnson, Lucinda

University of Minnesota Duluth

Dr. Lucinda Johnson is Director of the Center for Water and the Environment at the University of Minnesota's Natural Resources Research Institute. Dr. Johnson holds a B.A in Botany from Duke University, an M.S. in Entomology from State University of New York, College of Environmental Science and Forestry, and a Ph.D. in Zoology from Michigan State University. Dr. Johnson is an aquatic and landscape ecologist whose research focuses on the impacts of multiple stressors on aquatic ecosystems with emphasis on human activities (e.g., land use) and climate change. Much of her work has involved quantifying interactions between terrestrial and aquatic ecosystems, with particular emphasis on effects on communities and habitats. Dr. Johnson's current research activities involve: validating indicators of condition for Great Lakes coastal ecosystems; assessing climate change and land use change impacts on amphibian communities in the Prairie Pothole Region; and predicting climate change impacts on cold water fish communities in northern lakes and streams. The latter effort involves modeling phosphorus loading to inland lakes. Her research on amphibians specifically addresses the concept of functional landscape connectivity of wetlands with respect to changing hydrologic conditions associated with climate change. In addition, Johnson and her team consider the connectivity and spatial position of landscape patches (especially urban, agricultural land use) in predicting ecosystem processes and community structure in streams. Dr. Johnson serves on numerous advisory committees advising the State of Minnesota on climate change impacts on aquatic systems. Dr. Johnson has held leadership positions in the Association of Ecosystem Research Centers (President, 2008-2010; Secretary 2013-2015) and the Society for Freshwater Science (formerly North American Benthological Society; President, 2010-2011). She is a member of the U.S. Environmental Protection Agency (EPA) Science Advisory Board (SAB) Ecological Processes and Effects

Committee and served on the SAB panel for the review of the EPA Water Body Connectivity Report. Dr. Johnson also was recently appointed to the International Joint Commission's Science Advisory Board for a three-year term. She has participated on the SAB panel evaluating the effects of Mountain Top Removal Mining and the Conductivity Benchmark (2010-2011), and was recently appointed to serve on the agency's review panel for the Report on the Environment. Dr. Johnson's research is currently funded by grants from the U.S. EPA Great Lakes Restoration Initiative, the Minnesota Pollution Control Agency, and the U.S. Geological Survey Climate Change Program, and the Michigan Water Center.

Kling, George W.

University of Michigan

George W. Kling is the Robert G. Wetzel Professor of Ecology and Evolutionary Biology at the University of Michigan. He graduated from the University of Colorado with a Bachelor's degree in biology, and from Duke University with a Ph.D. in zoology. His postdoctoral studies were done at the Ecosystems Center in Woods Hole, MA, and he joined the University of Michigan faculty in 1991. Kling primarily studies aquatic ecology and biogeochemistry, and his research has focused on carbon and nutrient cycling, on using stable isotopes to understand food-web interactions, on the integration of lakes and streams in a landscape context, and on the role of microbial diversity in ecosystem function. He has worked internationally on arctic lakes and streams and on tropical lakes in Africa. In the past two years he has received research funding from the U.S. National Science Foundation. Kling's scientific outreach to the public through interviews about his research on climate change and on the killer lakes of Cameroon includes articles in magazines and newspapers, television and radio broadcasts, and television films. He has met regularly with U.S. Congress members to discuss issues of climate change and scientific integrity, was lead author of the Union of Concerned Scientists–Ecological Society of America publication 'Confronting Climate Change in the Great Lakes Region' (2003), and has served on advisory panels and steering committees for the National Science Foundation and several scientific societies. Kling is an elected Fellow of the American Association for the Advancement of Science, and received a National Science Foundation Presidential Faculty Fellowship, a National Academy of Sciences Young Investigator Award, the United Nations Sasakawa Award (Certificate for Disaster Reduction in tropical lakes), and two awards from the Association for the Sciences of Limnology and Oceanography, the John Martin Award for a high-impact paper in the field, and the Ruth Patrick Award for environmental problem solving.

McElroy, Anne

Stony Brook University

Anne McElroy is a Professor at the School of Marine and Atmospheric Sciences at Stony Brook University. She obtained her Sc.B. in Aquatic Biology from Brown University, and her Ph.D. from the Massachusetts Institute of Technology – Woods Hole Oceanographic Institution Joint Program in Oceanography. After completing her Ph.D., she was an National Research Council Postdoctoral Fellow at the Environmental Protection Agency (EPA) Environmental Research Laboratory in Narragansett, RI. Previously she served as Director of the New York Sea Grant Program, and as a faculty member at the University of Massachusetts in Boston. McElroy has served on many technical advisory committees both in the Boston and New York areas, and previously served on the National Academy of Sciences Committee to Review EPAs Environmental Monitoring and Assessment Program (EMAP) from 1991-1995, and the Ecological Effects and Processes Committee of

the EPAs Science Advisory Board from 1992-1995. She is currently a member of the Science and Technical Advisory Committee for EPA's Long Island Sound Study. McElroy's field of research is aquatic toxicology with specific areas of expertise relating to the bioaccumulation, metabolism and effects of organic contaminants, with particular emphasis on polycyclic aromatic hydrocarbons, endocrine disrupters, and most recently pharmaceuticals. Research funding for her laboratory within the last two years has included grants and contracts from the New York Sea Grant Institute and the Saltonstall Kennedy Program (both parts of the National Oceanic and Atmospheric Administration), the Gulf of Mexico Research Initiative, and the New Jersey Department of Transportation. She has more than 70 peer-reviewed publications, and has served as advisor or co-advisor for 2 postdoctoral fellows and 7 Ph.D. and 16 M.S. students whom have completed their degrees. She is currently supervising 4 Ph.D. students, and 1 M.S. students in her laboratory.

McLaughlin, Douglas

National Council for Air and Stream Improvement

Since 2002, Dr. McLaughlin has served as Principal Research Scientist at the National Council for Air and Stream Improvement, Inc. (NCASI). His primary responsibility is to provide leadership and direction to NCASI's Water Technical Studies Program which is funded primarily through member dues. In this capacity, Dr. McLaughlin designs and conducts water resources research projects to address the environmental information needs of NCASI's member companies. His current research is focused on the application of basic statistical methods and models to the derivation of aquatic life water quality criteria, and on the use of numeric criteria in water quality assessment and permitting. He has authored several peer-reviewed articles on approaches for quantifying statistical uncertainties to improve the transparency and use of existing numeric aquatic life criteria, and to guide their subsequent refinement. Dr. McLaughlin regularly interacts with NCASI member company and government agency scientists and managers on scientific and technical topics relating to water resources management. He has served on several U.S. Environmental Protection Agency Science Advisory Board review panels, providing input on EPA reports and guidance related to the use of statistical methods to derive numeric nutrient criteria, the effects of mountaintop mining activities on aquatic ecosystems, procedures to derive an aquatic life benchmark for specific conductivity, and the use of models to establish phosphorus load reduction targets for Lake Erie. In addition, he was an invited presenter at the USEPA "Invited Expert Meeting on Revising USEPA's Guidelines for Deriving Aquatic Life Criteria" in September 2015. He also has served on state agency science advisory panels related to aquatic life criteria development for nutrients and dissolved oxygen. Since 2003, Dr. McLaughlin has been a member of the Advisory Committee on Water Information (ACWI), a multi-organization committee established under the Federal Advisory Committee Act. He is currently a member of several ACWI subcommittees and working groups, including the National Water

Quality Monitoring Council (NWQMC). He is co-chair of the Water Quality Statistics and Assessment workgroup of the NWQMC. Dr. McLaughlin received a B.S. degree in Biological Resources Management in 1983 and an M.S. degree in Aquatic Biology in 1985, both from the University of Wisconsin-Green Bay. He received his Ph.D. in Land Resources from the University of Wisconsin-Madison in 1994, where his research focused on natural and induced transformations of polychlorinated biphenyls in aquatic sediments.

Meador, James

National Oceanic and Atmospheric Administration/NOAA Fisheries/NWFSC

Dr. James Meador is an environmental toxicologist with the National Marine Fisheries Service in Seattle, WA, USA, (National Oceanic and Atmospheric Administration (NOAA) Fisheries). He is also an affiliate professor in the Department of Environmental and Occupational Health Sciences, School of Public Health, University of Washington. Jim earned a Ph.D. in aquatic toxicology from the University of Washington and has worked more than 30 years in the field. Dr. Meador has extensive experience studying the environmental factors that control contaminant bioavailability and bioaccumulation, including the role of toxicokinetics in predicting bioaccumulation. He has also examined the use of tissue residues of various chemicals as the dose metric and its utility for toxicity assessment, monitoring, and environmental quality guidelines. In 2007, Dr. Meador organized and chaired a SETAC Pellston workshop (Society of Environmental Toxicology and Chemistry) to review the tissue residue approach for toxicity assessment. He has also been an invited member of two other Pellston workshops, one on Sediment Quality Guidelines and Related Tools for the Assessment of Contaminated Sediments and the other examining Environmental Hazard and Risk Assessment Approaches for Endocrine-Active Chemicals (EHRA). Dr. Meador was also an ad hoc member of the U.S. EPA Science Advisory Panel for Pesticides (FIFRA) in 2008. Additionally, he is also a senior editor for the SETAC journal Integrated Environmental Assessment and Management and a section editor for PLOS ONE. Jim currently studies the effects of metabolic disruptors on aquatic species. Currently, Dr. Meador is a co-PI on a grant to assess physiological and genomic responses in fish to pharmaceuticals, personal care products, and other chemicals of emerging concern in Puget Sound, WA and he is an international partner on a grant to study the effects of crude oil on polar cod in the Norwegian Arctic.

Melack , John M.

University of California

Dr. John M. Melack is a Professor in the Bren School of Environmental Science and Management and Department of Ecology, Evolution and Marine Biology at the University of California, Santa Barbara. He earned his BA in biological sciences from Cornell University, his PhD in zoology (with a focus on limnology) from Duke University, and completed a post -doctoral fellowship in aquatic ecology at the University of Michigan before joining the faculty at the University of California,

Santa Barbara. He played a seminal role in the establishment and development of the Bren School of Environmental Science and Management, which trains students to be professional environmental scientists, and has served as Associate and Acting Dean of the School. Dr. Melack has taught courses in aquatic ecology, limnology and biogeochemistry at the graduate and undergraduate level, and supervised as major professor 33 Ph.D. students and mentored 9 post-doctoral researchers. Dr. Melack's research has emphasized ecological processes in lakes, wetlands and streams, and hydrological and biogeochemical aspects of catchments. He has conducted multi-year studies in eastern Africa, the Amazon and Pantanal of South America and in lakes and watersheds within California. He has applied active and passive microwave and optical remote sensing to studies of lakes and wetlands. His research is funded currently by the US National Science Foundation, NASA, the US Department of Energy, NOAA and the Brazilian National Science Foundation. Dr. Melack has served on editorial boards of several scientific journals (currently: Limnology and Oceanography, Hydrobiologia, Biogeochemistry), and on advisory panels for government agencies (e.g., NASA, EPA, NSF), the National Research Council and academia (e.g., UC Water Resources Center; UC Toxic Substances Research and Teaching Program). He is an elected fellow of the American Association for the Advancement of Science and the American Geophysical Union, and was Blaustein Visiting Professor at Stanford University, and a Gleddon Fellow, University of Western Australia.

Meyer, Joseph

Applied Limnology Professionals LLC

Dr. Joseph S. Meyer is Chief Scientist for Applied Limnology Professionals LLC and an Affiliated Faculty Member in the Department of Chemistry at the Colorado School of Mines (CSM). He received a BS in Chemical Engineering from Lehigh University and a PhD in Zoology from the University of Wyoming (UW); was a Postdoctoral Fellow at the Swiss Federal Institute for Water Resources and Water Pollution Control (EAWAG/ETH); served as a Lecturer in the Fisheries Department at Humboldt State University; and was a Professor of Zoology and Physiology at UW. Dr. Meyer’s expertise includes aquatic toxicology/ecotoxicology, biogeochemistry, limnology, population biology, and ecological risk assessment. He was one of the originators of the Biotic Ligand Model of the toxicity of metals to aquatic organisms, which is the basis for USEPA’s current national-recommended freshwater aquatic life criteria (and its pending revised saltwater aquatic life criteria) for copper. Dr. Meyer’s current research on metal bioavailability and toxicity at CSM has been funded by the National Institute of Environmental Health Sciences and several industry organizations; and his consulting projects have been funded by several industry organizations. He belongs to the Society of Environmental Toxicology and Chemistry (SETAC) and has served on advisory committees for the U.S. and Canadian governments and industry, including the USEPA’s Aquatic Life Criteria Consultative Panel of the Science Advisory Board in 2005. He has lead/co-authored 60 refereed journal articles, one refereed

monograph, and 12 book chapters; lead-authored 1 book; lead-edited 1 book; lead/co-authored over 150 presentations at scientific meetings; and participated in 6 SETAC/Pellston workshops (including "Reassessment of Metals Criteria for Aquatic Life Protection" and "Reevaluation of the State of the Science for Water-Quality Criteria Development"). Therefore, Dr. Meyer has considerable direct experience in academia and industry and has interacted with government agencies regarding development and evaluation of aquatic life criteria/guidelines.

Monson, Philip

Minnesota Pollution Control Agency

Mr. Monson's work with the Minnesota Pollution Control Board (MPCA) includes developing and revising state surface water quality standards for aquatic life, providing technical expertise on surface water and sediment contaminants to our remediation, groundwater, stormwater, and other programs, and working with state, federal, and tribal partners on issues of mutual concern. This work involves integrating the science along with the interests of policy and agency resources in efforts to protect public resources. Mr. Monson has a comprehensive understanding of the biological effects of environmental contaminants on aquatic organisms and the associated chemical and physical properties that may influence toxicity. His graduate work (M.S. Entomology) provided the underpinnings of his understanding of aquatic ecology and field research. Mr. Monson's technical expertise includes his role as advisor for ecological risk assessment of contaminated sediments effects for MPCA remediation projects and the state's Natural Resource Damage Assessment program. In addition, he serves or has served on a number of technical panels as advisor to programs within the MPCA, the Minnesota Department of Natural Resources and the Minnesota Department of Agriculture.

Mosher, Robert

Illinois Environmental Protection Agency

Robert Mosher has a M.S. degree in zoology, with a thesis in stream ecology involving a stream dominated by municipal sewage treatment plant effluent. Upon graduation, Mr. Mosher joined an environmental consulting firm in St. Louis where he participated in power plant site studies and Great III Mississippi River fisheries studies. He became a contract worker at Monsanto, testing aquatic life for toxicity to chemical plant effluents and chemical products. He worked on the development of Ceriodaphnia as a test organism. Mr. Mosher taught biology at Southwest Illinois College (night school). During 31 years at Illinois EPA, he has managed the Water Quality Standards Section. His duties include implementation of state water quality standards and criteria as NPDES permit limits. New and upgraded water quality standards for Illinois were developed and adopted through rulemaking with the Illinois Pollution Control Board. Mr. Mosher's current projects include development of ammonia water quality standards that are protective of aquatic life including mollusks, nutrient criteria, and bacteria criteria. Currently, Mr. Mosher serves as

proxy for the ORSANCO Commissioner for Illinois.

Newman, Michael C.

College of William & Mary

Dr. Michael Newman is the Marshall Acuff Professor of Marine Science at the College of William and Mary, Virginia Institute of Marine Science. He received degrees from the University of Connecticut (B.A., M.S.) and Rutgers University (Ph.D.). His research emphasizes quantitative ecotoxicology with topics including chemical measurement statistics, bioaccumulation and biomagnification, and effects to individuals, populations, and communities. In addition to editing six books, he authored approximately 140 articles and six books including Quantitative Ecotoxicology and the textbook, Fundamentals of Ecotoxicology. His textbook, now in its 4th edition, has been translated into Mandarin and Turkish. He was funded by state, federal, international, and private sources for decades but has sought no funding for the last two years prior to retiring from academia. He has served on the Organization for Economic Co-operation and Development (OECD), Hong Kong Areas of Excellence, U.S. EPA, U.S. Department of Energy, U.S. Fish and Wildlife Service, U.S. National Academy of Sciences, and numerous state regulatory and risk assessment committees. He was one of two U.S. members of an OECD team charged with assessing statistical methods for analyzing toxicity data. He was a member of EPA teams such as the Federal Insecticide, Fungicide, and Rodenticide Act ECOFRAM working group, two FIFRA science advisory panels, the Chesapeake Bay Office science advisory board, a Food Quality Protection Act scientific review board, and a joint U.S. EPA-Israeli Water Agency working group. He was a member of numerous EPA SAB committees including those examining aquatic life criteria, PCB artificial reef risk assessment, emergency responses to Hurricane Katrina, a Region 6 GIS screening tool, and a committee reviewing past federal government ecological risk assessments. The EPA SAB formally recognized Dr. Newman's valued service in 2006. He received the Founder's Award (2004) from, and was made a Fellow of, the Society of Toxicology and Chemistry (2014) .

Pletl, James

Hampton Roads Sanitation District

Dr. Pletl is currently the Director of HRSD's Water Quality Department which includes approximately 100 chemists, biologists and scientists. He received a B.S. in Biology from Alfred University, NY in 1983 and a Ph.D. in Biological Oceanography from Old Dominion University, VA in 1992. He has worked with HRSD in Virginia Beach since 1989, first as an Environmental Scientist in the Technical Services Division of the Water Quality Department and then as the Chief of the Technical Services Division. Dr. Pletl has been active his entire professional career supporting and leading numerous environmental issue efforts for HRSD, the Virginia Association of Municipal Wastewater Agencies, and the National Association of Clean Water Agencies (NACWA). These issues often revolve around the Clean Water Act development and implementation of water quality criteria for

the protection of aquatic life. He has provided numerous comments to EPA over the past 25 years specifically addressing the steps that EPA takes to develop these criteria; particularly in regards to the uncertainty of information used to develop criteria and the relevance of data and these steps to actual ecological conditions and aquatic life exposure. This work includes the design of tests used to generate data to be used in deriving water quality criteria. He was previously invited by EPA to provide input on the process and was funded by EPA to meet with its staff and other experts in the field to discuss the water quality criteria development process. Dr. Pletl has participated on many local, state and national committees serving the Virginia Department of Environmental Quality and the Environmental Protection Agency addressing the development of water quality criteria and standards, laboratory detection and quantitation issues, the aquatic toxicity of treated wastewater and the development of National Pollution Discharge Elimination System regulations and permits. He was a member of the EPA Detection and Quantitation Federal Advisory Committee (FAC) as well as the EPA Environmental Laboratory Advisory Board FAC (also chair of ELAB) and is currently a member of the US Department of Interior Advisory Council on Water Information FAC. Dr. Pletl has supported the Water Environment & Reuse Foundation on numerous research projects addressing issues such as emerging contaminants and the development of water quality criteria to protect surface waters from nutrient impacts and is a current member of the Water Environment & Reuse Foundation Research Council. He is also a Community of Practice Director for the Water Environment Federation and is the Chair of NACWA's Water Quality Committee.

Reash, Robin J.

American Electric Power, Water & Ecological Resource Services

Robin (Rob) Reash is a Consulting Environmental Scientist for American Electric Power (AEP) in Columbus, OH. His principal duties include conducting scientific studies for wastewater permit compliance and conducting applied research on the fate and effects of power plant pollutants. His areas of expertise include bioaccumulation and effects assessment of mercury and selenium, development of protective water quality criteria, thermal biology and effects, and ecotoxicology. He has authored or co-authored 6 book chapters and 32 articles in peer-reviewed technical journals. Rob served on U.S. EPA's Science Advisory Board's Aquatic Life Criteria Consultation Panel (2005). Rob was an external peer-reviewer for U.S. EPA's draft revised aquatic life criteria for selenium (2002). He has served on technical advisory committees concerning the development of nutrient, temperature, and biological criteria. He currently serves as leader of the Electric Power Research Institute's (EPRI's) water quality criteria research program. Rob is Chairman of ORSANCO's Power Industry Advisory Committee and has experience in leadership roles with the Water Environment Research Foundation, the Utility Water Act Group, and EPRI. Before joining AEP, Rob was employed as an environmental specialist for the Oklahoma Water Resources Board and was a fisheries intern with the Ohio Environmental Protection Agency. He is a member of

the Society of Environmental Toxicology and Chemistry (SETAC) and served in 1992 as President of SETAC's Ohio Valley Chapter. Rob received a B.A. degree from Wittenberg University and a M.S. degree from Ohio State University. In 1998, Rob was certified as a Certified Fisheries Professional by the American Fisheries Society.

Reddy, Ramesh

University of Florida

Dr. K. Ramesh Reddy is Graduate Research Professor (distinguished professorship) and Chair of Soil and Water Science Department (SWSD) at the University of Florida (UF). He holds a B.S. and M.S. from AP Agricultural University-India and a Ph.D. from the Louisiana State University. Dr. Reddy's research addresses problems in science and technology in topical areas of biogeochemistry with emphasis on macro-elemental cycling; soil and water quality; wetlands and aquatic ecosystem restoration; carbon sequestration and greenhouse gases. His early research as a biogeochemist focused on the fate of nutrients in flooded rice paddies, followed by applying biogeochemical principles to study nutrient/contaminant behavior in various ecosystems including freshwater and coastal wetlands, and lakes, as related to water quality and eutrophication. Dr. Reddy developed an interdisciplinary program on biogeochemistry of wetlands and aquatic systems through the Wetland Biogeochemistry Laboratory (WBL) established within the SWSD. Since its establishment in 1987, the WBL has provided a home for graduate students for various disciplines, and post-doctoral associates and visiting scientists. His research group effectively integrated biogeochemical principles to address these issues. This led to interdisciplinary work with scientists from various disciplines including ecology, biology, limnology, and engineering. Dr. Reddy has published more than 350 refereed journal articles and book chapters, edited 5 books, and is the author of one text book. Dr. Reddy has served on numerous advisory committees at state, national, and international levels. He served on the U. S. National Committee on Soil Science, National Academy of Sciences. He served on U.S. National Committee – Everglades Restoration, National Academy of Sciences for four two-year terms. Dr. Reddy also serves on the U.S. Environmental Protection Agency, Science Advisory Board Ecological Processes and Effects Committee. He was invited to participate in a think tank meeting hosted by the National Environment Research Council and the Global Environmental Research Committee of the Royal Society, London, England. Dr. Reddy served as wetland consultant with the International Atomic Energy Commission. His select awards and honors include: UF-Graduate Research Professor, UF-Research Foundation Professor; Doctoral Dissertation Advisory /Mentoring Award (2005); Fellow, World Innovation Foundation; Environmental Quality Research Award, American Society of Agronomy (2002); Sigma Xi Senior Faculty Research Award (2002); Soil Science Applied Research Award, Soil Science Society of America (2001); Fellow, American Association for the Advancement of Science; Fellow - Soil Science Society of America (1988); Fellow - American Society

of Agronomy (1988); Gama Sigma Delta International Award (2006). Dr. Reddy's recent research funding is from U.S. Department of Interior, U.S. Department of Energy; National Science Foundation, St. Johns River Water Management District, and South Florida Water Management District.

Rosi-Marshall, Emma

Cary Institute of Ecosystem Studies

Dr. Emma J. Rosi-Marshall is an Associate Scientist at the Cary institute of Ecosystem Studies. She holds a Ph.D. and M.S. from the University of Georgia and a B.S. from the University of Michigan. Previously, Dr. Rosi-Marshall was an Assistant Professor in the Departments of Biology and Natural Science, Loyola University of Chicago. Dr. Rosi-Marshall conducts research on factors that control and influence ecosystem function in human-dominated ecosystems. Her research focuses on aspects of human modifications to freshwater ecosystems such as land use change and restoration, widespread agriculture and associated crop byproducts, urbanization, the release of novel contaminants, and hydrologic modifications associated with large dams. Her research spans a diversity of ecosystems from small streams to large rivers and has been conducted in rivers throughout the world. She employs diverse methods to explore ecological processes including biogeochemistry, production ecology, food webs, carbon cycling and the effects of emerging contaminants on ecosystem processes. Dr. Rosi-Marshall has received competitive grants from the National Science Foundation (NSF) and the U.S. Department of Agriculture (USDA) and has published findings from these studies in diverse national and international scientific journals. These grants have supported her research on the fate of crop byproducts on aquatic ecosystems (USDA), nutrient uptake and the role of wildlife moving nutrients in large rivers (NSF), urban stream ecology and the role of stream restoration influencing nutrient retention (NSF), and the influence of pharmaceuticals on stream ecosystems (Australian Research Council). Dr. Rosi-Marshall is also a Co-Investigator on the Baltimore Ecosystem Study Long-term Ecological Research Site (NSF) where she is exploring the influence of emerging contaminants on aquatic ecosystem function. She serves on the editorial board of Ecosystems and has served as a reviewer for NSF, USDA and for numerous national and international scientific journals.

Schlesinger, William

Cary Institute of Ecosystem Studies

Dr. William H. Schlesinger is President Emeritus of the Cary Institute of Ecosystem Studies, a private ecological research institute in Millbrook, NY. Dr. Schlesinger completed his A.B. at Dartmouth College and Ph.D. at Cornell University and joined the faculty at Duke University in 1980, where he retired in spring 2007 as Dean of the Nicholas School of the Environment and Earth Sciences and as James B. Duke Professor of Biogeochemistry. Dr. Schlesinger is the author or coauthor of over 200 scientific papers on subjects of environmental chemistry and global change and the

widely-adopted textbook Biogeochemistry: An Analysis of Global Change (Academic Press, 3rd ed. with Emily Bernhardt, 2013). He has published editorials and columns in the Charlotte Observer, Chicago Tribune, Los Angeles Times, Philadelphia Inquirer, and the Raleigh News and Observer. He was elected a member of the National Academy of Sciences in 2003, and was President of the Ecological Society of America for 2003-2004. He is also a fellow in the American Academy of Arts and Sciences, the American Geophysical Union, the Ecological Society of America, and the Soil Science Society of America. Dr. Schlesinger currently receives no federal research funding.

Sellinger, Cynthia

Oregon State University

Ms. Sellinger is an Assistant Professor at Oregon State University in the Department of Fisheries and Wildlife. Her educational background includes an M.S. degree in Aquatic Sciences from the University of Michigan, School of Natural Resources (minor in hydrology from the School of Engineering); a B.S. degree in Earth Sciences (minor in mathematics) from the University of New Orleans; and a Mapping Charting & Geodetic Officer Certification from the United States Air Force. Ms. Sellinger is a research hydrologist and modeler who is involved in multidisciplinary research that bridges the gap between climate, hydrology and fish ecology. Presently, her research is divided between the effect that climate change has on Pacific salmon (specifically, she statistically analyzes how major climatic events (ENSO and PDO) affect the respectively nutrient-rich and nutrient-poor oceanographic episodes (upwelling and down-welling)); and modeling underwater acoustic data to research the impacts of coastal hypoxia and other physical processes on fish in the Gulf of Mexico. Ms. Sellinger's research is funded through the National Academy of Sciences under a project entitled "Improved understanding of the Northern Gulf of Mexico pelagic ecosystem: integration, synthesis and modeling of high-resolution zooplankton and fish data"; and through the National Oceanic and Atmospheric Administration under a project entitled "User-driven tools to predict and assess effects of reduced nutrients and hypoxia on living resources in the Gulf of Mexico." Ms. Sellinger is a member of the American Geophysical Union and the North Pacific Marine Science Organization.

Smith, Eric P.

Virginia Polytechnic Institute and State University

Dr. Eric P. Smith is Chair of the Department of Statistics at Virginia Polytechnic Institute and State University. He holds a B.S. in Mathematics from the University of Georgia and an M.S. and Ph.D. from University of Washington in Biomathematics. Dr. Smith has been a member of the Virginia Tech faculty since 1982. His research focuses on the development and application of statistical methods to help understand and solve environmental and ecological problems. Dr. Smith was the Director of the Statistical Consulting Center 1995-2004. In that position he was responsible for providing statistical support to students, faculty

and staff and provided training to statistics students on the art of consulting. Dr. Smith has worked on a variety of statistical and scientific problems from areas such as engineering, education and natural resources. He teaches courses on multivariate analysis and linear models (regression, analysis of variance). Dr. Smith is a former Associate Editor of Environmetrics, the Journal of Agricultural, Biological and Environmental Statistics, and the Journal of the American Statistical Association. He was a section editor for the Natural Resources section for the Encyclopedia of Environmetrics and associate editor for Environmental Management. He has supervised 14 Ph.D. students. Dr. Smith's research is currently funded by grants from the Office of Naval Research, the U.S. Department of Agriculture (Improvement and Marketing of the Food and Agricultural Education Information System), and the National Marine Fisheries (Model complexity and stock assessment quality: an investigation of the performance of models of different complexity and implications for model selection in fisheries).

Smithee, Derek

Oklahoma Water Resources Board

Nationally, Mr. Smithee has served on the USDA/EPA Nutrient Criteria Advisory Committee, the Large Rivers Workgroup, and the Bacteria/Recreation Workgroup, and is a founding member of the WQS Managers Association. He also chaired the National State/EPA WQS Communication Forum and chaired the Association of Clean Water Administrators (formerly ASIWPCA) Monitoring, Standards and Assessment Committee for 13 years. In Oklahoma he serves on many similar workgroups and advisory committees. He was instrumental in the development of numerous state and federal regulations including WQS Implementation Rules, Anti-degradation requirements, numerical aquatic life and human health criteria, and Use Support Assessment Protocols and the new WQS Regulations issued in 2015 and has served on the Board of Directors for both ACWA and the Groundwater Protection Council. He is the Co-chair of the Oklahoma Scenic Rivers Joint Study Committee to which he was appointed by Oklahoma Governor Mary Fallin. Mr. Smithee received his B.S. from Oklahoma State University in Zoology in 1983 while working at the Cooperative Fish and Wildlife Research Unit (and playing football for Jimmy Johnson). He received his M.S. from the University of Oklahoma in 1987 in Environmental Science. He began work for the Oklahoma State Department of Health in 1984, transferring to the OWRB in 1987 where he has been Water Quality Programs Division Director since 1995.

Stubblefield, William

Oregon State University

Dr. William Stubblefield is a senior research professor in the Department of Molecular and Environmental Toxicology at Oregon State University. Dr. Stubblefield has more than 25 years of experience in environmental toxicology, human and environmental risk assessment, derivation of water, sediment and soil criteria, and aquatic and wildlife toxicology studies. He has authored more than 50

peer-reviewed publications and technical presentations in the areas of aquatic and wildlife toxicology and risk assessment. He has conducted a variety of research programs aimed at the evaluation of the toxicity of metals and hydrocarbons in the environment. Dr. Stubblefield's research has examined acclimation induced changes in the responses of aquatic organisms to copper, zinc, and cadmium; evaluated the acute and chronic toxicity of manganese, cobalt, aluminum, methyl tert-butyl ether, petroleum hydrocarbon mixtures, and a variety of other compounds; quantified the effects of water quality characteristics, e.g., hardness, alkalinity, dissolved organic carbon, on the toxicity of several metals (e.g., nickel, lead, and silver). His current research examines methods/models that can be used to predict the toxicity of metals and hydrocarbons to aquatic organisms. Current sources of research funding include the Cobalt Development Institute, the European Aluminum Association, Iron Platform, and British Petroleum. Dr. Stubblefield is an active member of the Society of Environmental Toxicology and Chemistry (SETAC), where he served as President of the Society, member of the Society's Board of Directors, chairman of the SETAC's Metals Advisory Group, and member of the Editorial Board for Environmental Toxicology and Chemistry. He has been an invited participant at a number of national and international scientific and regulatory conferences, served on U.S. EPA and National Institute of Environmental Health Sciences (NIEHS) peer-review panels, and frequently acts as a technical reviewer for a number of scientific publications. Dr. Stubblefield has a Ph.D. in Zoology and Physiology (emphasis in Environmental Toxicology) from the University of Wyoming, a M.S. degree in Toxicology/Toxicodynamics from the University of Kentucky, and a B.S. in Biology from Eastern Kentucky University.

Sullivan, Timothy

E&S Environmental Chemistry, Inc.

Dr. Timothy Sullivan has been president of E&S Environmental Chemistry, Inc. since 1988. He holds a B.A. (history) from Stonehill College, an M.A. (biology) from Western State College, Colorado, and a Ph.D. (biological sciences) from Oregon State University. He completed his postdoctoral training in aluminum biogeochemistry and episodic hydrologic processes at the Center for Industrial Research in Oslo, Norway. Dr. Sullivan's expertise includes the effects of air pollution on aquatic and terrestrial resources, watershed analysis, critical loads, nitrogen cycling, aquatic acid/base chemistry, episodic processes controlling surface water chemistry, ecosystem services, and environmental assessment. His research has been continuously funded for 28 years by federal and state agencies, including the U.S, Environmental Protection Agency (EPA), National Park Service, U.S. Forest Service, and New York State Energy Research and Development Authority. He was project manager to draft an integrated scientific assessment of effects of nitrogen and sulfur oxides on aquatic and terrestrial ecosystems in support of EPA's 2008 review of national ambient air quality standards and has contributed substantially to the ongoing (2017) review. He was author of the National Acid Precipitation Assessment Program (NAPAP) state of science and

technology report on changes in surface water chemistry from acid deposition. He authored aquatic portions of NAPAP's reports to Congress in 1991 and 1996. His publications have focused largely on nutrient enrichment and cycling, water and soil acidification, metal toxicity, and critical loads in both aquatic and terrestrial systems, including approximately 170 journal articles, book chapters, and technical reports. He has written five books, including three since 2014. These include "air pollution and freshwater ecosystems: sampling, analysis, and quality assurance" (CRC Press, with A. Herlihy and J. Webb); "air pollutant deposition and its effects on natural resources in New York State" (Cornell University Press); and "air pollution and its impacts on U.S. national parks" (CRC Press, release February 2017).

Tank, Jennifer

University of Notre Dame

Dr. Jennifer Tank is the Ludmilla F., Stephen J., and Robert T. Galla Professor of Biological Sciences at the University of Notre Dame. She is also the Director of the Notre Dame Linked Experimental Ecosystem Facility (ND-LEEF) and the Interim Director of the Notre Dame Environmental Change Initiative. Dr. Tank holds a B.S. in Zoology from Michigan State University, and an M.S. and Ph.D. from Virginia Tech in Ecology. She spent two years as a post-doctoral researcher on the first Lotic Intersite Nitrogen experiment (LINXI) led by Dr. Patrick Mulholland at Oak Ridge National Lab. She joined the faculty in the Department of Biological Sciences at the University of Notre Dame in 2000. Dr. Tank studies the cycling of nutrients in stream and rivers systems with a focus on the restoration of ecosystem function in impacted systems and the effects of agricultural conservation practices on nutrient cycling and water quality. Dr. Tank is leading the Indiana Watershed Initiative (IWI) Regional Conservation Partnership Program Project recently funded by the U.S. Department of Agriculture, which includes collaboration with The Nature Conservancy, local soil and water conservation districts, County Surveyors and the Natural Resources Conservation Service with a goal of improving the health and nutrient removal efficiency of streams draining cropland in the agricultural Midwest through implementation of watershed-scale conservation. Dr. Tank has served on advisory boards for the National Center for Ecological Analysis and Synthesis (NCEAS), the North American Carbon Program (NACP), the Environmental Protection Agency (EPA), and is a member of the Editorial Advisory Board for the journal Biogeochemistry. She is the most recent recipient of the University of Notre Dame's James A. Burns Award for Excellence in Graduate Education and also was selected as a Leopold Leadership Fellow of the Woods Institute at Stanford University in 2013. Dr. Tank's research has been funded in the past two years by the National Science Foundation (NSF), the U.S. Department of Agriculture (USDA), the U.S. Fish and Wildlife Service (USFWS), the U.S. Geological Survey (USGS), The Nature Conservancy, The Walton Family Foundation, and the University of Michigan Water Center.

Tietjen, Todd

Southern Nevada Water Authority

Dr. Todd Tietjen is currently the Regional Water Quality Division Manager for the Southern Nevada Water Authority. He received his Ph.D. in Aquatic Ecology from the University of Alabama, an M.S. in Aquatic Biology from Southwest Texas State University and a B.S. degree from Alfred University with major in Environmental Studies. He worked with the USGS Grand Canyon Monitoring and Research Center as a post-doctoral researcher investigating the influence of Glen Canyon Dam on nutrient and organic matter in Grand Canyon National Park. Dr. Tietjen has worked in reservoir limnology and aquatic ecology for over 25 years focusing on the unique changes reservoirs exert on physical, chemical and biological processes in these man-made systems. Currently he is focused on the complex physical and chemical interactions affecting water quality in Lake Mead driven by the influences of the urban Las Vegas Wash, the agricultural Muddy and Virgin Rivers, and the Colorado River leaving Grand Canyon. He currently oversees water quality efforts carried out by the Southern Nevada Water Authority on the Colorado River (Lake Mead, Lake Mohave) and the Las Vegas Wash working in areas as varied as monitoring the raw water supply for the Las Vegas Valley, water quality for recreation activities on the Lower Colorado River, the potential impact of contaminants on native species, toxin producing algae in low productivity systems and the impacts of invasive species on the ecosystem and infrastructure. Dr. Tietjen is recognized as a Certified Senior Ecologist by the Ecological Society of America and as a Certified Lake Manager by the North American Lake Management Society. Dr. Tietjen recently completed a term as Regional Director for the North American Lake Management Society, is currently a Southern Director for the California Lake Management Society, and an Associate Editor for the Journal Lake and Reservoir Management.

Valett, Maurice

University of Montana

Dr. Maurice Valett is a Professor of Systems Ecology at the University of Montana. He holds a B.S. in Animal Biology from Western Washington University, an M.S. in Zoology from the University of Montana, and Ph.D. in Zoology from Arizona State University. Dr. Valett has been a member of the University of Montana faculty since 2009. His research focuses on ecosystem ecology and biogeochemistry, nutrient retention in lotic ecosystems, groundwater-surface water exchange, floodplain river interactions, and wetlands and streams as flow-through systems. Dr. Valett was Associate and Assistant Professor of Ecology at the Virginia Polytechnic Institute and State University from 1998-2009. He was Research Assistant Professor and Visiting Assistant Professor in the Department of Biology at the University of New Mexico from 1991-1994. Dr. Valett is a member of the American Geophysical Union, the American Society of Limnology and Oceanography, the Ecological Society of America, the Society for Freshwater

Sciences, and the Geological Society of America. He previously served as a member of the National Science Foundation Geobiology and Low-Temperature Geochemistry Panel and the Carbon and Water in Earth Sciences Panel. Dr. Valett is associate editor of Limnology and Oceanography and from 1998 – 2001 was associate editor of the Journal of the North American Benthological Society. Dr. Valett's research is currently funded by grants from the National Science Foundation (Climate Change and river-floodplain interactions) and the State of Montana's Natural Resource Damage Program (metals, metabolism, and trout populations in the Clark Fork River Superfund Site).

Weis, Judith S.

Rutgers University

Dr. Judith Weis is Professor Emerita, Department of Biological Sciences, Rutgers University, Newark, New Jersey. She previously served as Associate Dean for Academic Affairs at the University. She also has served as an American Association for the Advancement of Science/American Society of Zoologists Congressional Science Fellow with the Senate Environment and Public Works Committee, and served as a Program Director at the National Science Foundation. She has been a visiting scientist at the U.S. Environmental Protection Agency, both at the research lab at Gulf Breeze, Florida and in the Office of Water (Ocean and Coastal Protection Division). Dr. Weis received her bachelor's degree from Cornell University, and M.S. and Ph.D. from New York University. Her research focuses on estuarine ecology and ecotoxicology. She has published about 200 refereed papers, focusing mainly on stresses in the estuarine environment, and their effects on organisms, populations and communities. Particular areas of focus have been effects of metal contaminants on growth, development, and behavior; altered behavior and ecology of populations in contaminated estuaries; development of tolerance to contaminants in populations living in contaminated areas; effects of invasive marsh plant species on estuarine ecology and on fate of metal contaminants. Much of her research has been focused on estuaries in the New York/New Jersey Harbor area, but she has worked in other estuaries along the Atlantic Coast and in Indonesia and Madagascar. Dr. Weis has served on the Boards of Directors of the Society of Environmental Toxicology and Chemistry (SETAC) and the American Institute of Biological Sciences (AIBS). She was the Chair of the Biology Section of American Association for the Advancement of Science (AAAS) in 2000, and was the President of AIBS in 2001. She was on the board of the Association for Women in Science (AWIS) 2004-2006. She is a fellow of the American Association for the Advancement of Science (AAAS). She has served on advisory committees for the U.S .Environmental Protection Agency (the Scientific and Technical Achievement Awards Committee for the EPA Science Advisory Board, the Endocrine Disruptors Screening and Testing Advisory Committee – EDSTAC, and most recently EPA Science Advisory Board Panels for review of Aquatic Life Criteria in 2005 and the Report on the Environment in 2007) and for the National Oceanic and Atmospheric Administration (Sea Grant Advisory

Board). She has been a member of the Marine Board of the National Research Council. She is Chair of the Science Advisory Board of the New Jersey Department of Environmental Protection, and co-chair of the Science and Technical Advisory Committee of the New York/New Jersey Harbor Estuary Program. She was previously on the Editorial Board of Transactions of the American Fisheries Society and the Bulletin of Environmental Contamination and Toxicology and was Associate Editor of Bulletin of Environmental Contamination and Toxicology. She is currently on the Editorial Board of BioScience and one of the editors of the on-line Encyclopedia of Earth. During the past two years, Dr. Weis' research has been funded by the City of New York.

Weisberg, Stephen

Southern California Water Research Project Authority

Dr. Stephen Weisberg is Executive Director of the Southern California Coastal Water Research Project Authority, a research institute created by 14 California water quality management agencies to provide the scientific foundation for their management activities. Dr. Weisberg and his organization are routinely involved in providing scientific support for preparation of California's water quality criteria. Their studies support criteria development for traditional chemical constituents as specified in the 1985 guidance manual, but also include support for parameters such as nutrients, beach bacteria, and biological communities that require alternative approaches to criteria development. At a personal level, Dr. Weisberg is leading California's efforts to explore the need for, and develop potential approaches to, creating new criteria for management of ocean acidification. Dr. Weisberg's research also focuses on developing molecular assessment tools to support environmental monitoring programs. He is a national leader in aquatic monitoring programs, having established the Southern California Bight regional monitoring program, previously led the benthic component of the Chesapeake Bay monitoring program, and was part of the team that created the U.S. EPA's Environmental Monitoring and Assessment Program. Besides his scientific endeavors, Dr. Weisberg serves on a number of scientific advisory committees, including the Chesapeake Bay Water Quality Criteria Addendum Technical Review Committee, the State of California Water Quality Monitoring Council, the California Clean Beach Task Force, and the California Ocean Protection Council Science Advisory Team. He also serves on the Governing Boards for the National Association of Marine Laboratories and for the Southern California Coastal Ocean Observing System. Dr. Weisberg received his undergraduate degree from the University of Michigan and his Ph.D. from the University of Delaware. Dr. Weisberg's research funding support comes primarily from the State of California, though he also presently has grant funding from the National Oceanic and Atmospheric Administration.